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RESPONSE TO USDOI COMMENTS ON THE DRAFT FEASIBILITY STUDY REPORT

ROLLING KNOLLS LANDFILL SUPERFUND SITE

CHATHAM, NEW JERSEY

Prepared for

Rolling Knolls Landfill Settling Parties

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EXECUTIVE SUMMARY

This report responds to the United States Department of the Interior (USDOI) assessment of the draft Feasibility Study (FS) Report for the Rolling Knolls Landfill Superfund Site (the Site) in Chatham, New Jersey (the "USDOI Assessment").

The Site is a former municipal landfill located at the end of Britten Road in Chatham Township, New Jersey. The area of the Site where waste disposal occurred covers approximately 170 acres, consisting of 140 acres of landfill and an approximately 30-acre area with debris scattered on the ground surface. Approximately 35 acres of the landfill are located within the Great Swamp National Wildlife Refuge (GSNWR) which is owned by the USDOI. The United States acquired this portion of the landfill in 1964 and allowed landfilling operations to continue on it until 1968.

As discussed in this response, the USDOI Assessment makes assumptions that are not supported by the data in the USEPA-approved Remedial Investigation (RI), the Baseline Human Health Risk Assessment (HHRA), and the Baseline Ecological Risk Assessment (BERA). In addition, the USDOI Assessment ignores USEPA risk assessment procedures and guidance to reach conclusions that are not appropriate for making risk-based decisions for remediation of the Site. The approach of the USDOI Assessment appears to be driven by the desire to support USDOI's "expressed preference" for a remedial alternative that includes removal of waste and contaminated soil from the Wilderness Area. For example:

- The USDOI Assessment arbitrarily expands the Site boundary. The boundary of a Superfund site is defined by USEPA as being co-extensive with the contamination. USDOI, however, added 115 acres from within the GSNWR to the area defined by the RI by alleging the existence of off-landfill migration pathways that the RI results do not support. Arbitrarily making the Site larger allows USDOI to argue that an insufficient number of samples were taken during the risk assessment and creates a misleading impression of the magnitude of the potential risks at the Site.

- The USDOI Assessment disagrees with how the RI and BERA field program scopes were developed and implemented, and how the baseline ecological and human health risk assessments were prepared. However, USFWS personnel participated in the scoping of the RI and BERA (as did USEPA) and had many opportunities to provide input on the soil and sediment sampling programs, but never suggested that the proposed field sampling was inadequate. The USDOI

Assessment criticism of the scope of the field work also ignores that sampling results from the RI and BERA field investigations were combined for the estimation of potential ecological risks in the BERA. Moreover, USDOI's statements regarding insufficient sediment sampling were made without a supporting rationale and are most likely based upon its arbitrary expansion of the Site boundary.

- The USDOI Assessment improperly evaluates soil at the Site based on the New Jersey Residential Direct Contact Soil Remediation Standard (RDCSRS) of 400 parts per million (ppm) for lead. Yet a Restrictive Covenant recorded on the Site in November of 2019 prohibits residential development, and the RDCSRS has no applicability to ecological risk. In addition, the, USDOI Assessment ignores that an Alternative Remediation Standard (ARS) of 2,700 ppm for lead was approved by New Jersey Department of Environmental Protection (NJDEP) and used with USEPA concurrence.

- Rather than adhering to established USEPA risk assessment protocols, the USDOI Assessment simply compares sample results to generic ecological screening benchmarks to support its conclusion of unacceptable ecological risk. The direct estimation of ecological risks at the Site is accomplished in the more refined and detailed evaluation in the BERA (and not simply by comparing results to screening benchmarks). Disregarding the BERA results overlooks critical Site data and is not an appropriate basis for making risk-based decisions for Site remediation. The residual ecological risks for each of the remedial alternatives evaluated in the draft FS Report were calculated using data from the RI and BERA to confirm that the alternatives mitigate potential ecological risk. The approach used for these calculations is consistent with USEPA ecological risk assessment protocols which allow for the assessment of population level risks, rather than a sample-by-sample comparison approach based upon the development of ecological PRGs, which are not required under USEPA ecological risk assessment guidance.

- USDOI seeks to align remedial Alternatives 3 and 4 in the draft FS Report with its expressed preference to remove all waste from the portion of the landfill on the GSNWR. However, there is no technical or practical justification for such removal. The existing potential risks to the ecological receptors are minimal and are addressed by the currently proposed Alternatives 3 and 4 without any changes. The modifications that USDOI proposes would destroy the existing, well-developed woody and wetland habitats on the USDOI portion of the landfill.

Therefore, the adverse effects presented by such a remedy outweigh the benefits to be achieved from USDOI's modified approach. Further, USDOI's suggested modification ignores that USDOI historically allowed disposal of wastes on this portion of the landfill following their acquisition of this property.

In conclusion, the human health and ecological risk assessments that were performed and incorporated into the RI and draft FS Report are supported by sufficient data and followed USEPA risk assessment guidance. The proposed remedial alternatives in the draft FS Report are appropriate for the conditions and risks at the Site.

This response underscores the thoroughness of the investigations, risk assessments, and evaluation of remedial alternatives conducted for the Site. Accordingly, the draft FS Report fairly and completely evaluates the appropriate remedial alternatives and provides a sound basis for USEPA to select the remedy for the Site.

1. INTRODUCTION

This report is a response to the United States Department of the Interior (USDOI) assessment of the draft Feasibility Study (FS) Report (Geosyntec Consultants, Inc. [Geosyntec] 2018a) for the Rolling Knolls Landfill Superfund Site (the Site) in Chatham, New Jersey. The draft FS Report was submitted to the United States Environmental Protection Agency (USEPA) on July 31, 2018 on behalf of Chevron Environmental Management Company for itself and on behalf of Kewanee Industries, Nokia of America Corporation (f/k/a Alcatel-Lucent USA Inc.), and Novartis Pharmaceuticals Corporation (collectively, the Group). This response has been prepared by Geosyntec and Integral Consulting, Inc. (Integral) on behalf of the Group.

The initial version of USDOI's report titled Rolling Knolls Landfill Superfund Site Feasibility Study Assessment prepared by KMPower Consulting, Inc. (heretofore identified as "USDOI Assessment") was dated April 2019. A revised version (still dated April 2019) was provided to the Group in September 2019. This report addresses the September 2019 version of the USDOI Assessment.

1.1 Site Description and History

The Site consists of a former municipal landfill located at the end of Britten Road in Chatham Township, New Jersey (Figure 1-1). The area of the Site where waste disposal occurred covers approximately 170 acres, consisting of 140 acres of landfill with a layer of waste material (18 feet or less in thickness) overlying a native clay layer, and an approximately 30-acre area west of the landfill with isolated areas of debris scattered on the ground surface, but with no buried waste, referred to as the Surface Debris Area (Figure 1-2).

The landfill was used for disposal of municipal waste from Chatham Township and nearby municipalities from the 1930s to approximately 1968. Landfilled materials are generally consistent with typical municipal solid waste expected within a landfill that operated during this period. Evidence of potential industrial waste, identified based on visual observations and analytical results, was observed at three isolated areas, estimated at being less than an acre and comprising only a small proportion of the total volume of waste disposed of at the landfill. Other than the dirt access roads, which are periodically maintained, the majority of the Site is well vegetated with grasses, shrubs and trees, with only a few bare areas where waste is visible at the surface. Historical operations of the landfill included the application of pesticides for mosquito and rodent control on the landfill and the surrounding area.

Of the 170 acres that comprise the landfill and the Surface Debris Area, approximately 105 acres of the landfill and the 30-acre Surface Debris Area are on privately owned land. Approximately 35 acres of the landfill are on land that is part of the Great Swamp National Wildlife Refuge (GSNWR) which is owned by the United States and operated by the United States Fish and Wildlife Service (USFWS) for USDOI (shown on Figure 2). The United States acquired this property in 1964 and allowed landfilling operations on it until disposal operations ceased in 1968.

1.2 Primary Concerns with the USDOI Assessment

In our review of the USDOI Assessment the Group has identified the following five primary general topics of disagreement with the USDOI Assessment:

1. USDOI uses a larger Site boundary than was defined for the project.

   The boundary of a Superfund site is defined by USEPA as all contaminated areas within the area used to identify the site, as well as any other location where that contamination has come to be located (USEPA 2018). Figure 2 in the USDOI Assessment shows a much larger Site boundary than is appropriate based upon the results of the remedial investigation (RI) and risk assessments; specifically, USDOI added 115 acres from within the GSNWR to the Site area. This expansion of the Site boundary beyond that defined by the USEPA-approved RI is arbitrary. To make the Site larger, USDOI alleges off-landfill migration pathways (presumably by surface water runoff or groundwater) for lead (and by inference, other Chemicals of Potential Ecological Concern (COPECs) such as polychlorinated biphenyls [PCBs] and dichlorodiphenyltrichloroethane [DDT]); however, such a transport mechanism was not identified in and is not supported by the RI. Arbitrarily making the Site larger allows USDOI to make the further unsupported argument that an insufficient number of samples were taken during the risk assessment (see 2 below). It also creates a misleading impression relative to the magnitude of the potential risks at the Site.

2. USDOI disagrees with how the RI and Baseline Ecological Risk Assessment (BERA) field program scopes were developed and implemented, and how the baseline ecological and human health risk assessments were prepared.

   USFWS personnel participated in the scoping of the RI and BERA (as did USEPA) and had many opportunities to provide input on the soil and sediment sampling programs; however, at no time did USDOI suggest that the proposed field sampling was inadequate. The BERA was finalized and approved by USEPA in December 2016 yet USDOI felt the need to critique the BERA

sampling program in their 2019 Assessment. The BERA-related comments in the latter did not acknowledge that sampling results from both the RI and BERA field investigations were combined for the estimation of potential risks to most of the ecological receptors (the exception is the sediment toxicity testing, which was performed on a subset of the sediments collected to support the BERA).

Furthermore, some of USDOI's statements regarding insufficient sediment sampling are directly related to its arbitrary expansion of the Site boundary, particularly south and east of the landfill footprint.

3. USDOI improperly based the assessment of the lead soil results on the New Jersey Residential Direct Contact Soil Remediation Standard (RDCSRS) of 400 parts per million (ppm) for lead as the benchmark to compare the lead soil results from the Site.

   USDOI reasoned that the 400 ppm standard was the Preliminary Remediation Goal that applied to other recreational areas at the Site (e.g., the ballfield and shooting range). USDOI is incorrect. First, as established by the RI neither the ballfield nor the shooting range were impacted by the landfill and thus, neither should be part of the Site for remedial purposes. Second, and more importantly, the RDCSRS for lead was not used as the PRG for those areas. Rather, because there were no exceedances above the RDCSRS in those areas, no further evaluation was performed.

   Based upon this fundamental error, the USDOI Assessment used the RDCSRS, which is based upon a human residential exposure scenario, as the benchmark 1) for human receptors even though the reasonably anticipated future use human exposure scenario at the Site is not residential and 2) for ecological receptors even though the RDCSRS has no applicability to ecological risk. With regard to human receptors, USDOI ignored that an Alternative Remediation Standard (ARS) of 2,700 ppm for lead was developed to support the draft FS Report, following established protocols of the New Jersey Department of Environmental Protection (NJDEP), precisely because the exposure scenarios for the residential and non-residential soil standards are not applicable given that the only potential human receptors are trespassers or recreators (on the GSNWR portion of the landfill). The ARS were approved by NJDEP for the Site and USEPA agreed with their use in the draft FS Report.

4. The USDOI comments do not address or acknowledge the results of the BERA.

The USDOI Assessment ignores USEPA's established risk assessment process and instead simply compares sample results to conservative screening benchmarks to support its conclusion of unacceptable ecological risk. The Group, however, in compliance with USEPA risk assessment protocols, used the conservative screening benchmarks to determine the need for further assessment in the Screening Level Ecological Risk Assessment (SLERA) (Arcadis 2013), and the BERA Work Plan was prepared based upon the results of the SLERA. Accordingly, the direct estimation of ecological risks at the Site is accomplished in the more refined and detailed evaluation in the BERA (and not by comparing results to screening benchmarks). Disregarding the BERA results overlooks critical Site data and is not an appropriate basis for making risk-based decisions for Site remediation.

The USDOI Assessment also commented that ecological PRGs were not developed in the BERA; however, the development of ecological PRGs is not required under USEPA ecological risk assessment guidance (USEPA 1997). The residual ecological risks for each of the remedial alternatives evaluated in the draft FS Report were calculated using data from the RI and BERA to confirm that the alternatives mitigate potential ecological risk. The ecological risks were calculated using the same toxicity reference values (TRVs) used in the BERA as well as the range of potential TRVs. After discussions with USEPA, and to support effective risk-based decision making for the Site, the calculated doses were evaluated using the range of TRVs (rather than the single geometric mean of the range of TRVs, as was done in the BERA). As established in the residual ecological risk assessment (rERA), all of the calculated doses fell within the range of TRVs, and it was therefore concluded that there would be no significant ecological risks remaining at the Site after implementation of the evaluated alternative. Such an approach is consistent with USEPA ecological risk assessment protocols which allow for the assessment of population level risks, rather than a sample-by-sample comparison approach based upon the development of ecological PRGs.

5. USDOI disagreed with the selection of remedial alternatives in the draft FS Report.

   USDOI notes its "expressed preference" for a remedial alternative that includes removal of waste and contaminated soil from the Wilderness Area and reestablishing native vegetation; consolidating removal material on private portions of the landfill and capping it with the clay that is available onsite; and, establishing native warm season grasses/meadow mix on the cap. As a result, in

an effort to align the remedial alternatives in the draft FS Report with its preference, USDOI proposes modifying Alternatives 3 and 4 to include removal of all waste from the portion of the landfill on the GSNWR to protect ecological receptors. However, as discussed in the rERA, the existing potential risks to the ecological receptors are minimal and are addressed by the currently proposed Alternatives 3 and 4 without any changes. The modifications that USDOI proposes would destroy the existing, well-developed woody and wetland habitats on the USDOI portion of the landfill. The impact of capping or removal on the existing wildlife would be extreme, and although it is likely that the habitat would ultimately recover, the remediated area would take years, if not decades, to develop into a mature habitat comparable to what currently exists on the site. Therefore, the risk presented by such a remedy outweighs the benefits to be achieved from USDOI's preferred remedial alternatives.

1.3 Response Document Structure

The USDOI Assessment grouped most comments into four categories:

- Surface soil and landfill waste;
- Sediment;
- Groundwater; and
- Data gaps.

Responses to comments regarding surface soil and landfill waste, are discussed in Section 2. The sediment comment responses are discussed in Section 3, and the data gap comments are discussed in Section 4. This report does not respond to comments on Subsection 4.1 of the USDOI Assessment on groundwater because the USEPA has indicated it is likely that remedial alternatives for groundwater will not be included in the current draft FS Report (USEPA 2019).

In addition, the USDOI Assessment provides comments on the remedial alternatives that were evaluated in the draft FS Report, and the Group's responses to these comments are presented in Section 5.

2. RESPONSES TO COMMENTS ON SURFACE SOIL AND LANDFILL WASTE

The USDOI Assessment focused on the sampling results for lead in soil presented in the Remedial Investigation Report (RIR; Geosyntec, 2018b) and Baseline Ecological Risk Assessment (BERA; Integral, 2016a) to evaluate the proposed remedial alternatives in the draft FS. The focus on lead is based upon the presumption that remedial measures taken to address lead would also address the other COPECs, such as PCBs and DDT compounds. USDOI then performed an independent evaluation of the surface soil lead results in Section 4.1. There are several key issues related to the lead analysis, which are presented below.

2.1 USDOI used a larger Site boundary than was defined for the project

Under CERCLA, the boundary of the Site is coextensive with the contamination. Figure 2 in the USDOI Assessment, however, shows a much larger Site boundary than is appropriate based upon the results of the RI and risk assessments. This expansion of the Site boundary beyond that under CERCLA is arbitrary and unsupported based on data collected as part of the field investigations.

The technical foundation for this boundary adjustment is not discussed in the USDOI Assessment. Rather, USDOI appears to presume chemical impacts well beyond the landfill footprint, which were not identified during the course of the RI and risk assessments. Such an expansion of the Site's boundary also appears to assume a transport mechanism for lead (and presumably, other COPECs) from the landfill to the adjoining areas; however, such a transport mechanism is not supported by the results in the RI.

2.2 USDOI suggested that the GSNWR should be addressed separately and not grouped in with the larger Site

The USDOI Assessment states that those portions of the Site within the GSNWR should be addressed separately from the other areas of the Site. There is no technical, regulatory, or practical reason to treat the areas within the GSNWR differently from the other areas of the Site.

Throughout the RI/FS process, the USEPA required the Group to evaluate the residual chemicals present for the entire landfill, which includes the approximately 35 acres of landfill on the GSNWR (heretofore identified as "USDOI portion of the landfill"). The Baseline Human Health Risk Assessment (BHHRA), prepared by an USEPA consultant

(CDM 2014) evaluated potential human health risks on a landfill-wide basis. This is entirely appropriate because there is no physical separation between the USDOI portion of the landfill and other areas of the landfill, so human health exposures are the same.

From an ecological perspective, there is no reason for the ecological receptors in the GSNWR to be treated separately from those on the landfill. The plants and animals that live in the GSNWR belong to the same population of organisms that live outside it, so it is ecologically appropriate to evaluate the risks that are present in the combined areas because it is all one ecological unit. USDOI's reference to subareas on Figure 5 of the BERA as support for its position is misplaced. The subareas were only identified to assist the risk management process, and not because there is a substantive basis to treat these areas differently.

To further support the conclusion that the BERA was thorough and that all portions of the Site should be evaluated as a whole, the BERA also evaluated reference areas and compared their calculated risks to those from the Site. These samples provide information on conditions in areas that have not been affected by the Rolling Knolls landfill. These included upstream locations for the Loantaka and Black Brooks, an off-Site Reference Pond, and reference soil locations within the GSNWR. Potential ecological risks from these areas were calculated and compared to those from the landfill areas (e.g., BERA Figure 5-2a). The RI and BERA samples used for developing the exposure point concentrations (EPCs) were cross-referenced by the evaluated areas in BERA Appendix E Table E4-5.

2.3 USDOI states that Preliminary Remediation Goals for the protection of wildlife are needed

The draft FS Report identified areas to be remediated based on a human health Preliminary Remediation Goal (PRG) assessment. USDOI states that PRGs for wildlife protection are needed and should be used to determine whether additional areas of the landfill require remediation to meet risk mitigation goals.

Development of ecological PRGs is not required to evaluate and select a protective remedy. Per USEPA ecological risk assessment guidance (USEPA 1997; see Section 8.2.2), the risks associated with potential remedies must consider human and environmental impacts. The risk manager must then balance (1) residual risks and (2) other non-contaminant impacts of the remedy. The approach used in the draft FS Report was to first define potential remediation areas and alternatives based on the human health risk based PRGs. The residual risks associated with the remedial alternatives were then evaluated using two ecological receptors (American robin and short-tailed shrew), which

were the risk-driving receptors in the BERA. The objective of the rERA (Appendix C of the draft FS Report) was to determine if the proposed remedial alternatives would protect ecological receptors. In these cases, the EPCs used to calculate the residual risks for each alternative were based on (1) replacing the sample location results that were addressed by the alternative (e.g., capped area soil) with detection limits, and (2) the results of soil samples outside of the area affected by the alternative (e.g., soils outside of the cap area). The residual ecological risks were calculated using the same toxicity reference values (TRVs) used in the BERA as well as the range of potential TRVs. If the calculated dose was within the range of TRVs the Group and USEPA concluded that there would be no significant ecological risks from the evaluated alternative.

The rERA, which evaluates potential residual risks on a spatially representative basis, is an appropriate alternative to the PRG approach which is an evaluation of individual sampling locations. The rERA is an appropriate risk assessment tool that provides USEPA the information needed to evaluate remedy effectiveness and meet the threshold criteria for the protection of human health and the environment set forth in the National Contingency Plan.

2.4 USDOI states that lead in GSNWR soil poses a risk to all wildlife receptors and recreational users

USDOI states that lead in soil on the USDOI portion of the landfill poses a risk to all wildlife receptors and recreational users based on the comparisons of soil results to screening benchmarks. The ecological and human health components of this statement are discussed separately.

Human Health Risk

The USDOI Assessment used a residential PRG of 400 mg/kg for lead, which it claims is the PRG used for the Ballfield and Shooting Range. This is not correct; a lead PRG was not included in the draft FS Report because lead concentrations in these areas were not associated with unacceptable risk and were less than the applicable remediation standard (e.g., the New Jersey residential soil standard, the site-specific ARS, or a Federal Remediation Guideline). Furthermore, the Baseline Human Health Risk Assessment prepared by the USEPA consultant (CDMSmith 2014) did not use a PRG but rather used the Integrated Exposure Uptake Biokinetic Model (IEUBK) to assess potential lead risks for children and the Adult Lead Model to assess potential risks for adults.

The USDOI Assessment uses a lead PRG of 400 mg/kg, which is the New Jersey RDCSRS. USDOI states that the RDCSRS for lead should be the PRG for the USDOI portion of landfill. The RDCSRS is a conservative benchmark (e.g., it assumes residential

usage with an exposure duration of 350 days per year and an adult soil ingestion rate of 100 mg/day). The draft FS Report compared the results for lead at the Ballfield and Shooting Range to the 400 mg/kg standard, however, no results from these areas exceeded that benchmark.

The Ballfield and Shooting Range are distinct from and are not considered part of or similar to the landfill, including the USDOI portion of the landfill. First, the Ballfield and Shooting Range are not on the landfill. In addition, the Ballfield and Shooting Range are designed and built for recreational activities; are easily accessible (located near Britten Road and can be driven to); and may reasonably anticipate regular use (even though such use is not occurring now). None of these conditions applies to the USDOI portion of the landfill: the USDOI portion of the landfill is not easily accessible (in fact, access is very difficult given that there are not access points and the area is extremely overgrown); and regular use is not reasonably anticipated. Given the vast size of the GSNWR and the inaccessibility of the 35-acre USDOI portion of the landfill, it is extremely unlikely that a recreator would repeatedly (much less 350 days per year) choose to visit these 35 acres, rather than the many other areas of the GSNWR that are much more accessible.

The appropriate human health PRG for lead that was developed for the landfill is 2,700 mg/kg. This Site-specific PRG was developed using the NJDEP's ARS process (Geosyntec 2018c), and was evaluated and approved by the NJDEP (NJDEP 2018), with the understanding that it would be applied to all areas of the landfill. It was developed to protect both adults and adolescents that may trespass on the landfill.

The ARS is based on a very conservative exposure frequency assumption for a trespasser on the landfill of 84 days per year. This exposure frequency assumption is also applied by USEPA (in the BHHRA) to a passive recreator scenario: given the location and inaccessibility of the USDOI portion of the landfill, and especially given the availability of other portions of the GSNWR, it is unreasonable to expect that a recreator would return to the USDOI portion of the landfill 84 or more days a year. For these reasons, the USDOI assertion that a lead PRG of 400 mg/kg is appropriate for the USDOI portion of the landfill is invalid.

Furthermore, USDOI attempts to support an impression of widespread risks by plotting lead results color coded to 400 mg/kg as a conservative screening benchmark in Figures 3 and 4 (USDOI 2019). A sample-by-sample comparison to a conservative benchmark is not consistent with USEPA risk assessment protocol and is not a basis to question the findings of the baseline risk assessment, which assesses potential risks using a representative average media concentration. USDOI's comparison (shown in Figure 3 of the USDOI Assessment) nonetheless shows a rapid decline in lead concentrations from

the landfill footprint to the areas east and south within the GSNWR indicating there has been virtually no migration of metals off the landfill. This is not surprising given the immobility of metals in soils. Furthermore, because no significant migration has taken place in the five decades since the landfill ceased operation, no significant future migration is expected.

Ecological Risk

To evaluate ecological risks from lead in sediments, USDOI used generic ecological screening benchmarks to assess potential impacts to benthic invertebrates. For the assessment of the dietary pathway, the "acceptable" soil values were "estimated from BERA Tables Appendix H". USDOI back-calculated the acceptable soil concentrations using from the hazard quotients and EPCs used for the risk calculations. Based on this assessment, they showed that most of the GSNWR soil samples are above the screening values for lead, and concluded that additional remedial action beyond the alternatives presented in the draft FS is needed.

The BERA did not use this approach to assess potential risks to ecological receptors from lead or any of the other COPECs based on dietary exposures, because this is not consistent with USEPA guidance (USEPA 1997). USEPA requires the use of average or 95UCL COPEC concentrations in the exposure media (i.e., soils, sediments, diet) to assess potential risks. Therefore, the analysis presented in Table 1 of the USDOI Assessment that purports to derive ecological soil benchmarks is not indicative of the potential ecological risk nor consistent with USEPA guidance.

Screening criteria are conservative values. Although appropriate for a SLERA, screening criteria are not appropriate for use in a BERA or the FS stage of the evaluation. Per USEPA guidance, the results of the BERA are considered to assess the magnitude of the risk and the certainty/uncertainty in the risk assessment results along with the other FS evaluation criteria, in making the remedy selection decisions. This was supplemented by the rERA, which started with BERA benchmarks (i.e., TRV_{NOAEL} and TRV_{LOAEL} values; BERA Appendix A Tables A1-1a and A1-1b) and determined if an unacceptable risk would exist post-remedy. The rERA then evaluated the certainty/uncertainty in the toxicity and exposure assumptions, such as the range of potential toxicity values, and made conclusions regarding risk. The approach taken in the rERA and draft FS Report is consistent with USEPA guidance and effectively manages ecological risk at the Site. The rERA establishes that there is no potential for significant risks to the evaluated receptors based on implementation of Remedial Alternatives 3 or 4.

In contrast, the USDOI approach is not consistent with USEPA guidance, it fails to consider a number of actual Site conditions that are relevant to the evaluation of

ecological risk (e.g. bioavailability) and ranges of potential toxicity (discussed in the rERA) and it ignores or minimizes the salutary effects of the proposed remedial alternatives to support its pre-ordained conclusion that lead (itself and as a surrogate for other COPECs) at the Site presents an unacceptable ecological risk.

2.5 USDOI claims that the nature and extent of COPECs have not been sufficiently defined and more data are needed

USDOI takes the position that the Group collected too few and too widespread samples and that ecological receptors with small home ranges (e.g., meadow vole at 0.019 hectares) are at risk from exposure to COPECs, including in small hot spots that collectively could impact these populations.

This statement is incorrect. USFWS personnel participated in the scoping of the RI and BERA field investigations and had many opportunities to provide input on the soil sampling program (for example, during review of work plans or while attending meetings with USEPA and the Group), and at no time suggested that the proposed field sampling was inadequate. From an ecological risk standpoint, there are sufficient data to assess the potential risks to ecological populations of the area. USDOI claims that the RI and BERA should have collected samples on a spatial scale that is equal to the smallest home range of any evaluated ecological receptor (in this case, about 0.25 acre for shrews). However, there is no need to define exposures on such a fine spatial scale and no regulatory (USEPA or NJDEP) guidance requires this. Furthermore, populations, by definition, would not be impacted by small hot spots. The sampling program does not need to be designed to characterize soil in the individual home range of each individual animal.

The BERA did not assess risks from specific sampling points (e.g., risk from exposure to BERA soil sample SOI-009) but rather used EPCs based on averages and 95UCL of the mean across the soil samples. Such an approach is representative of the range of potential COPEC concentrations that are present at the Site and is consistent with Superfund risk assessment guidance (e.g., USEPA 1992).

2.6 USDOI claims that important soil data collected on the GSNWR were not included in the RI

USDOI states that certain soil data collected elsewhere in the GSNWR were not included in the RI, and by extension in the BHHRA, BERA and the draft FS Report. This statement is misleading because, although given the opportunity, USDOI failed to identify or provide any GSNWR soil data that it now claims was omitted from the RI (and subsequent risk assessments). USFWS personnel participated in the scoping of the RI

and BERA and had many opportunities to identify additional soil data for consideration in these assessments; they, however, failed to identify or submit any soil data.

In addition, our review of the publicly available literature did not identify any soil data from the GSNWR that was in a location in close proximity to the landfill. The GSNWR Refuge Conservation Plan (USFWS 2014) identifies the following point sources of chemical contaminants: the Site; the multiple asbestos disposal sites (grouped together as the "Millington Superfund Site"), one of which (OU3, also known as the Dietzman Tract) is located on the GSNWR; and the Harding Township Landfill. The OU3 asbestos site is located approximately two miles west of the Site (USFWS 2001)[1] and the Harding Township Landfill is located more than 2 miles west of the Site near Long Hill Road. Neither is close to the Site, which precludes their utility as additional data sources. Remediation work at the asbestos sites and the Harding Township Landfill are complete, according to USFWS (2014).

To our knowledge, all available soil data have been included in the RI and considered in preparing the BERA, BHHRA and draft FS Report.

[1] This distance is an approximation based on review of Figure 1 in USFWS (2001). This document did not report any georeferencing information for the asbestos dump site.

3. RESPONSE TO COMMENTS ON SEDIMENT

Section 4.2 of USDOI Assessment includes an evaluation of the sediment results in the RI. There are several key issues related to the analysis of the results, which are presented below.

3.1 USDOI contends that RI data are insufficient to determine the nature and extent of contamination and important environments have not been sampled

USDOI makes several misleading statements. In Section 4.2 of its Assessment, USDOI states that

"…within the BERA sediment data, large areas were not sampled. Specifically, sediment samples were not evaluated in the BERA within Black Brook from the up-gradient location of SED 017, to sediment samples SED 006 and SED 007 (in close proximity to each other) on the eastern border of the landfill, which is a reach of approximately one mile (Figure 6)."

The USDOI statement regarding the areal coverage focuses only on Figure 4-2 of the BERA, but this only showed the samples that were collected as part of the BERA field investigations. This was clearly stated in BERA Section 4.3 ("... section describes the distribution and concentrations of the COPECs in the media collected in 2016"). However, data from both the RI and the BERA were combined for the BERA risk calculations. The USDOI statement ignores that the combined RI and BERA datasets were used for the BERA evaluation. Figure 2-7 of the RIR provides the locations of the sediment samples collected between SED 017 and SED 006 and SED 007 as part of the RI field investigations.

USDOI further claims that more samples are needed in Black Brook and in a long-standing pond, and vernal pools, but fails to identify areas where samples were not taken or why the samples obtained are insufficient.

USDOI personnel participated in the scoping of the RI and BERA field sampling programs and had many opportunities to identify additional sediment data for consideration in these assessments, but they did not. In any event, sediment sampling during the RI and BERA provide sufficient data to assess the potential risks to ecological populations. These include 7 sediment samples collected from the large West Pond #1 and a combined 8 samples from the smaller North Ponds #1 and #2 – presumably these are what USDOI is referring to as "long-standing pond". In addition, there were 8 samples from Loantaka Brook west of the landfill, and 4 samples from Black Brook downstream of the landfill, 24 soil/sediment samples from the wetland area east of the

landfill (which include the diffuse channel of Black Brook), 34 soil/sediment samples from the wetland area south of the landfill, and 2 sediment samples from the off-Site reference pond. The landfill perimeter surface water and sediment samples, collected along the edge of the landfill footprint, represent surface water that originated from a combination of runoff from the landfill surface and the diffuse channel of Black Brook. These appear to be the samples that USDOI is identifying as "vernal pools" but because surface water was observed at these locations throughout the field collection program, they are likely perennial. As discussed in the BERA Work Plan, which was approved by USEPA and other regulatory entities, sediments were collected for toxicity testing and chemical analyses as follows: three samples from West Pond #1, one sample each from North Pond #1 and North Pond #2, two samples from standing water southwest of the landfill, one sample from upstream portion of Black Brook, and two samples from the off-Site Reference Pond.

USDOI also claims inadequate sampling of a ponded area on the northeast side of the landfill located between the upgradient Black Brook sampling locations and SED006 and SED007. This location is shown on Figure 2 of the USDOI Assessment and is stated as "apparent in all aerial photographs." However, this area was not identified as a pond when the Site base map was prepared in 2007 from an aerial photograph taken specifically to develop the base map, which included the Site ponds. This so-called ponded area is also not visible in Google maps satellite imagery for available imagery years, nor was it reported by field personnel during the RI or BERA field work. Regardless of whether the area is a pond, a wetland, or a stream, samples were collected near this area as part of the RI (see SD-53 and SD-54 shown on Figure 7 of USDOI 2019) upstream of the BERA samples SED006 and SED007. The USDOI claim of inadequate sampling is, thus, baseless.

3.2 USDOI states that COPECs in sediments pose a risk to benthic organisms

USDOI states that COPECs in sediments pose a risk to benthic organisms, basing this conclusion solely on the comparison of sediment COPEC concentrations to the New Jersey Ecological Benthic Screening Levels (NJEBSLs).

USDOI's comparison of sample results to the NJEBSLs as the basis for their assessment is inappropriate given that NJEBSLs are highly conservative screening benchmarks. For organic chemicals (such as PCBs) these benchmarks assume a total organic carbon (TOC) content of 1% and, for metals, these do not include parameters which can affect the bioavailability of the metals from the sediments. These benchmarks are intentionally conservative (i.e., low) so that further assessment of the chemical is not "missed" (i.e., avoid the false negative conclusion that the chemical does not require further assessment).

Exceeding these values does not establish an unacceptable risk to benthic organisms, as USDOI argues. Rather, comparison to the benchmarks is the initial stage of the risk assessment process, which was performed as part of the SLERA to identify the COPECs requiring further evaluation. The further assessment occurs in the more quantitative BERA and incorporates Site-specific characteristics, such as sediment TOC and bioavailability determinants such as AVS/SEM, in the assessment of potential sediment risks. These Site-specific characteristics are evaluated by field observations, sample collection, and analysis, and are more robust than the screening used in the SLERA.

For the sediments evaluated in the BERA, which included the ponds located on the landfill and landfill perimeter surface water, the data indicate there is no ecological risk from exposure to sediments, after accounting for Site-specific characteristics, with the exception of a single perimeter sample (BERA sediment sample SED007). Furthermore, although NJEBSLs and other screening benchmarks are exceeded (HQsed value of 5 and 18 for PCBs and total DDx, respectively; see BERA Appendix Table E5-2b), the toxicity test data and the AVS/bioavailability data strongly support the findings of no potential ecological risk across the sediment locations, which factors are directly relevant to the remediation evaluation. Therefore, USDOI's assertion that COPECs in sediment pose a risk to benthic organisms based upon comparisons to generic screening benchmarks, overlooks the important, Site-specific findings in the BERA that is central to the CERCLA risk evaluation process. The latter contemplates a more detailed and site-specific risk evaluation than performed in a SLERA.

3.3 USDOI states that the BERA did not evaluate bioaccumulative COPECs

USDOI claims that ecological risks were underestimated because PCBs, DDT and other bioaccumulative COPECs were not evaluated for higher trophic level species. This statement was made in USDOI's sediment discussion, so this response focuses on that medium (although the same issues are also relevant to soil-based exposures).

This USDOI statement is overly broad and misleading. USDOI focuses on the results from BERA samples SED 006 and SED 007, which are proximal to each other on the eastern perimeter of the landfill. Although there was standing water in these areas, they were not sufficiently large to provide forage or prey for higher trophic level organisms such as herbivorous or piscivorous birds (see Photograph 1). Therefore, the assessment in these areas focused on benthic invertebrates (BERA Assessment Endpoint No. 2) and Amphibians and Reptiles (Assessment Endpoint No. 3). The potential for exposures to higher trophic level organisms via food-chain exposure to prey that can bioaccumulate COPECs was assessed in the ponds located on the landfill.

PHOTOGRAPH 1

Photograph of BERA SED006 sampling location

However, results from BERA SED 006 and SED 007, along with other sediments collected from the eastern perimeter of the landfill were combined with soil samples from this area and evaluated as "Wetland East" in the BERA for higher trophic level organisms such as tree swallows. The same models used for estimating prey tissue levels from the on-Site ponds were used to calculate values in prey from this area.

The BERA did not assess body burdens in higher trophic levels as an indicator of potential risk but instead focused on potential growth and reproductive effects for the higher trophic level organisms from the consumption of prey (or forage) that can bioaccumulate the COPECs. The measurement endpoints of potential growth and reproductive effects from prey consumption by higher trophic level organisms was discussed in the BERA Work Plan and in the BERA (Integral 2016a, 2016b), and approved by USEPA. The use of growth, survival and reproductive endpoints was selected to minimize the uncertainty from use of more complex bioaccumulation models to estimate tissue levels in the higher trophic level organisms from dietary exposures.

If such bioaccumulation models were to be used, the predicted results would need to be verified by (as examples) the collection of blood or egg samples from the higher trophic level organisms. Such a field program also has additional uncertainties, chiefly concerning representativeness of the sampling (e.g., did the female bird feed exclusively at the Site?) and uncertainty in the significance of a toxicity metric (e.g., does the presence

of a COPEC in egg yolk represent an actual risk or does it simply reflect an exposure?). Such uncertainties preclude their utility for ecological risk management, particularly given that potential reproductive effects were endpoints that were used to develop the TRVs in the BERA and the rERA. The BERA hazard quotient risk results showed no or minimal potential for reproductive effects to higher trophic level species at the Site.

3.4 USDOI analysis of sediments collected from Black Brook is misleading

The USDOI evaluation of the Black Brook sediment results was misleading because it presumed that the sediments collected from standing water on the east-side perimeter of the landfill were part of the Black Brook channel. Tables 6 and 7 in the USDOI Assessment discuss the Black Brook sediment results. Table 6 summarizes the COPEC results from a portion of the Black Brook channel and landfill perimeter sediment samples collected in 2016 and compares them to conservative screening benchmarks. As demonstrated above in Section 2.4, ecological screening levels are extremely conservative, and exceedances are not determinative of unacceptable risk. USDOI showed a similar subset of sample results in Table 7, but inexplicably excluded from this table all of the samples collected as part of the BERA from this area.

In Tables 5 and 6 of the USDOI Assessment all of the sediment samples were identified as Black Brook samples but these included samples that were collected from four locations (SED006, SED007, SED008 and SED009) that represented landfill perimeter samples and were not apparently connected hydrologically to the two upstream locations (SED016 and SED017) and one downstream location (SED018), which were collected from apparent channels of a Black Brook tributary. As stated in the BERA, "[t]he landfill perimeter samples (SED006, SED007, SED008 and SED009) were excluded from this comparison because these were collected from the diffuse channel areas of Black Brook" which represent landfill surface water runoff rather than being representative of the conditions in Black Brook.

Based on this analysis, the USDOI Assessment concluded that the Black Brook system has been impacted by the landfill. However, this conclusion presumes that there is a continuous stream between all these locations, which is not true. The only obvious continuous channel for Black Brook is west of the landfill footprint within GSNWR (see Figure 2 of the USDOI Assessment). In the immediate vicinity of the landfill footprint there is no clear channel, which is why samples collected along the edge of the landfill were identified as landfill perimeter samples (see Photograph 1 of the SED006 sampling location).

In their Table 6, USDOI also excluded, without explanation, two of the landfill perimeter samples (SED008 and SED009) that they had originally assigned to be part of Black Brook in Table 5. As shown in BERA Table 5-3b, these two samples were collected from the southwestern perimeter of the landfill and showed no exceedances of the site-specific screening values for the evaluated organic chemicals (Total DDx and Total PCBs) and showed some slight exceedances of the screening values for three metals (copper, lead and selenium). BERA Table 5-5b evaluated the AVS/SEM results from these two samples and showed little potential for toxicity from metals, even though the screening values were exceeded.

The results from landfill perimeter samples SED-006 and SED-007 were discussed in Section 5.1.2 of the BERA. Although these locations were not evaluated for sediment toxicity (see BERA Figure 5-1) the BERA noted that there was some potential for benthic sediment toxicity at these locations. However, the other landfill perimeter samples and Black Brook sediment samples showed no unacceptable risks, so it is inaccurate to conclude that the Black Brook system has been impacted by the landfill. In addition, designation of some of the sampling locations as vernal pools (in Table 7) without verification that the surface water from these locations meet the definition of a vernal pool (e.g., surface water was or was not perennial at these locations; N.J.A.C. 7:7A-1.4) is misleading and misrepresents the ecological importance of the sampled areas.

3.5 USDOI misrepresents the Loantaka Brook results

The USDOI asserted that the landfill has impacted Loantaka Brook, but this is not correct given that the brook is located west of the landfill and not hydrologically connected, either from surface water runoff or via groundwater, to the landfill. Table 8 in the USDOI Assessment attempts to show that Loantaka Brook has been impacted by the landfill. As discussed in the BERA, surface water in Loantaka Brook is not hydrologically connected to the central fill area of the Site. Any groundwater or surface water migrating from the central fill area to the west would be intercepted by West Pond #1 and associated wetland areas. The main channel of Loantaka Brook is located approximately 1,000 feet west of the main fill area (see BERA Figure 1-1), and approximately 500 feet west of the Surface Debris Area on the west side of the Site. Runoff from the Surface Debris Area may only affect the adjoining riparian areas bounding the eastern portion of the Brook near the Site.

The data presentation in Table 8 from the USDOI Assessment is misleading because although it uses a portion of the BERA COPEC list, it selectively excludes sampling results from the BERA that do not support their position. BERA Appendix C Table C2-2 lists the chemical sediment sampling results. The USDOI Assessment does not include the results of any samples collected in 2016, which exhibited lower concentrations than

those reported in the USDOI Assessment. As examples, there were no detectable total PCBs in the Loantaka Brook sediments collected for the BERA (detection limits ranged from 41 to 72 µg/kg) but USDOI Table 8 does not include these more recent data. Similarly, lead concentrations in the BERA sediment samples ranged from 4 to 23.9 mg/kg but again, USDOI Table 8 does not include these data. If the BERA results had been incorporated into the USDOI analysis (i.e., if they used all of the available RI and BERA data), they would have concluded that the Loantaka Brook has not been impacted by historical Site-related activities.

4. RESPONSE TO COMMENTS ON DATA GAPS

4.1 USDOI states that the draft FS Report contains "errors and omissions"

Generally, the USDOI Assessment is focused on specific data evaluation concerns in the draft FS Report and other documents related to the Rolling Knolls Site; those USDOI comments are addressed in other sections of this response. However, in Section 2 of its Assessment, USDOI makes a broader statement about the completeness and accuracy of the draft FS Report, as follows:

> "Significant data gaps and data assessment errors were identified in the draft FS characterization data. A subsequent review of the final RI surface soil characterization data indicates that important lead concentration data on the Refuge Area of Interest (RAOI) are not in that document. Additionally, a comprehensive assessment of sediment contamination data and its associated impacts was not conducted to support alternatives that would allow source landfill waste to remain onsite without containment, which presents a limiting data gap for FS decision making. These errors and omissions raise concerns regarding the quality of the draft FS and the remediation alternatives proposed."

Section 2.6 of this document discusses the soil lead data and concludes that all available lead data were included in the RIR, BERA, and draft FS Report. USDOI did not identify other lead data that should have been included. Accordingly, there is no basis for USDOI's comment that "important lead concentration data . . . are not in that document".

Section 3 of this document discusses the sediment data, with responses to each of USDOI's concerns about the quantity and location of the samples, and the evaluation of the sediment data. USDOI's evaluation of the sediment data is incorrect. The investigations and data interpretation in the draft FS Report are appropriate and protective of human and ecological receptors, and the use of sediment data to evaluate potential remedies in the draft FS Report is proper.

USDOI is unable to demonstrate that the draft FS Report contains errors or omissions, or that there should be concerns about the quality of the draft FS Report or the proposed remedial alternatives.

5. RESPONSE TO COMMENTS ON REMEDIAL ALTERNATIVES

The USDOI Assessment makes clear that USDOI has an "expressed preference" for a remedial alternative that includes removal of waste and contaminated soil from the Wilderness Area. Accordingly, the USDOI Assessment evaluation of the remedial alternatives in the draft FS Report are designed to align the alternatives with its preference through suggested modifications.

5.1 USDOI states that only Alternative 5 (capping of all waste) would directly reduce impairment to the GSNWR

Alternative 5 includes capping all landfill waste, including the USDOI portion of the landfill. However, Alternative 3 and Alternative 4 also include remediation of part of the USDOI portion of the landfill, centered around sample location SS-118. These alternatives allow for either capping or removal of this area. Therefore, it is not accurate to say only Alternative 5 directly reduces impairment, as Alternatives 3 and 4 include either capping or removal of part of the USDOI portion of the landfill. In any case, Alternative 3 and Alternative 4 also effectively address the risk at the Site, including on the USDOI portion of the landfill, and are appropriate remedies if selected. Finally, in its February 6, 2018 comments on the draft FS Report, USDOI stated unequivocally that it does not support Alternative 5.

5.2 USDOI proposes that Alternatives 3 and 4 could be modified by capping or removing landfill waste from the GSNWR

USDOI proposes modifying Alternatives 3 and 4 to remove all waste from its portion of the landfill to protect ecological receptors. As discussed above, there is no technical or practical basis to treat the GSNWR portion of the landfill differently from the remainder of the landfill. Moreover, as discussed in Section 2, the risks to the ecological receptors are minimal and are addressed by proposed Alternatives 3 and 4 without any changes. USDOI's modification would destroy the existing, well-developed woody and wetland habitats on the USDOI portion of the landfill. The impact of capping or removal on the existing wildlife would be extreme, and although the habitat would ultimately be restored, the restored area would take years, if not decades, to develop into a mature habitat comparable to that present now. The Site data, as presented in the BERA and discussed in Sections 2 and 3 of this report, provide no justification to support the removal of all waste on the USDOI portion of the landfill to protect ecological receptors.

5.3. USDOI states that groundwater contamination from heavy metals has impacted the GWNSR, and only Alternative 5 has the potential to prevent further migration of contaminants

The USDOI Assessment expresses concern about the potential future migration of heavy metals in groundwater to surface water in Black Brook. The presence of heavy metals in groundwater at the GSNWR is discussed in Section 4.1; as explained in that Section, impacts to groundwater on GSNWR are very limited and they do not result in risk to human or ecological receptors by exposure to surface.

USDOI's comment suggests that further migration of contaminants in groundwater to surface water at the GSNWR might result in risks to human or ecological receptors. However, the landfill operated from the 1930s (approximately 80 years ago) and ceased operations in 1968 (approximately 50 years ago). The constituents in the landfill have had at least 50 years to migrate to the GSNWR, but that has not happened. This is demonstrated by examining benzene in well MW-19. Benzene is more soluble and more mobile than metals in groundwater. Yet well MW-19 contains only approximately 3 ug/L of benzene (slightly above its GWQS of 1 ug/l), and downgradient pore water samples contained no benzene. Given this very minor impact in a well adjacent to the edge of the USDOI portion of the landfill and the time since the landfill was last in use, the data show that potential future impacts are extremely unlikely. USDOI stated that only Alternative 5 (a full landfill cap) has the potential to prevent further migration of contaminants. However, Alternatives 3 and 4 also contain remedial measures, including capping part of the landfill, and removing soil from other areas. These alternatives, which would destroy much less habitat than Alternative 5, would address potential future migration (no matter how minor this future migration is likely to be, if there is any migration at all).

5.4 USDOI proposes that Alternative 4 could be expanded to include removal of the USDOI portion of the landfill

This comment in Section 4 of the USDOI Assessment is similar to that addressed above in Section 5.2 of this report. With respect to wildlife, the response to the USDOI proposal is two-fold: (1) removal of the USDOI portion of the landfill would destroy all the wildlife habitat that currently exists in that portion of the Site; and (2) the results of the BERA conclusively show that such actions are not required to protect wildlife.

Regarding recreational users, the PRG for lead of 2,700 ppm that the remedial alternatives in the draft FS Report are based on will protect recreational users. This is discussed in Section 2.4 of this report.

6. CONCLUSIONS

The human health and ecological risk assessments that were performed and incorporated into the RI and draft FS Report were supported by sufficient data and followed USEPA risk assessment guidance.

In its Assessment, USDOI has challenged the overall approach taken for the RI BERA and draft FS, despite participating in the development of the work scopes for those studies. Rather than following USEPA's risk assessment protocols, the USDOI Assessment improperly compares sampling points to screening level benchmarks to artificially establish risk.

The USDOI Assessment shows a much larger Site boundary than is justified based upon the results of the RI and risk assessments. This expansion of the Site boundary is arbitrary. To expand the boundary, USDOI assumes a transport mechanism for lead (and presumably, other COPECs) from the landfill to adjoining areas; however, such a transport mechanism was not identified in and is not supported by the results of the RI. This arbitrary expansion of the Site boundary is a basis upon which USDOI states inadequate data were collected and creates a misrepresentation of the risks.

The USDOI Assessment also arbitrarily applied the New Jersey residential soil remediation standard to assess potential human health and ecological risks in soil on the landfill. Notwithstanding the misapplication of a residential standard to screen soils for potential ecological risks, USDOI ignored the soil ARS of 2,700 ppm for lead that was developed to support the draft FS Report. The ARS was developed following established protocols from NJDEP, was reflective of likely current and future Site use (e.g., trespassing), and was approved by NJDEP for use at this Site. Since the exposure assumptions for trespassers on which the ARS are based are the same as for recreators that may enter the portion of the Site in the GSNWR, this ARS is protective of recreators as well.

The USDOI Assessment largely overlooks the results in the BERA, the most important document evaluating the potential risks to ecological receptors, and instead uses only selective Site data that support its position. The BERA clearly shows no significant adverse impacts to ecological receptors, and only a low level of risk to certain receptors. Rather, USDOI has compared Site soil and sediment data to highly conservative screening levels, which evaluation has been superceded by the risk analysis performed as part of a BERA that is the basis for ultimate development of the risk management plan for the Site.

Without justification and merely to align the remedies with its "expressed preference", the USDOI Assessment proposed modifications of certain remedial alternatives in the draft FS Report, to specifically address the entire 35-acre portion of the landfill that is on the GSNWR differently from the remainder of the landfill. There is no technical or practical justification to remove the waste from this portion of the landfill. USDOI's suggested modification ignores that USDOI historically allowed disposal of wastes on this portion of the landfill following acquisition of this property and ignores the ecological impacts of such a remedy.

Ultimately, a careful review and analysis of USDOI's comments underscores the thoroughness and completeness of the investigations, risk assessments, and evaluation of remedial alternatives conducted at the Site by the Group; in fact, USEPA completed one of the human health risk assessment itself. Accordingly, the draft FS Report submitted by the Group in July 2018 fairly and completely evaluates the alternative remedial actions for the entire Rolling Knolls Landfill Superfund Site, and provides the basis on which the remedial action for the Site should be determined.

7. REFERENCES

Arcadis U.S. 2013. Screening-Level Ecological Risk Assessment, Rolling Knolls Landfill Superfund Site, Chatham, New Jersey. February 2012, Revised April 2013

CDM Federal Programs Corporation. 2014. Baseline Human Health Risk Assessment, Rolling Knolls Landfill Superfund Site, Chatham, New Jersey. June.

Geosyntec Consultants. 2018a. Draft Feasibility Study Report, Rolling Knolls Landfill Superfund Site. July.

Geosyntec Consultants. 2018b. Remedial Investigation Report, Rolling Knolls Landfill Superfund Site. January.

Geosyntec Consultants. 2018c. Revised Memorandum, Development of Alternative Remediation Standards, Rolling Knolls Landfill Superfund Site. July 3.

Geosyntec Consultants. 2017. Supplemental Ground Water and Baseline Monitored Natural Attenuation Report, Rolling Knolls Landfill Superfund Site. January.

Integral Consulting. 2016a. Baseline Ecological Risk Assessment, Rolling Knolls Landfill Superfund Site, Chatham, New Jersey. December

Integral Consulting. 2016b. Baseline Ecological Risk Assessment Work Plan, Rolling Knolls Landfill Superfund Site, Chatham, New Jersey. April.

New Jersey Department of Environmental Consulting. 2018. Letter to John Persico of Geosyntec Consultants. Approval: Technical Memorandum – Development of Alternative Remediation Standards. July 5.

United States Environmental Protection Agency. 2019. Letter to Mark Pedersen of the New Jersey Department of Environmental Protection. December 12.

United States Environmental Protection Agency. 2018. National Priorities List: Proposed Rule. 83 Federal Register 2576, 2578. January 18.

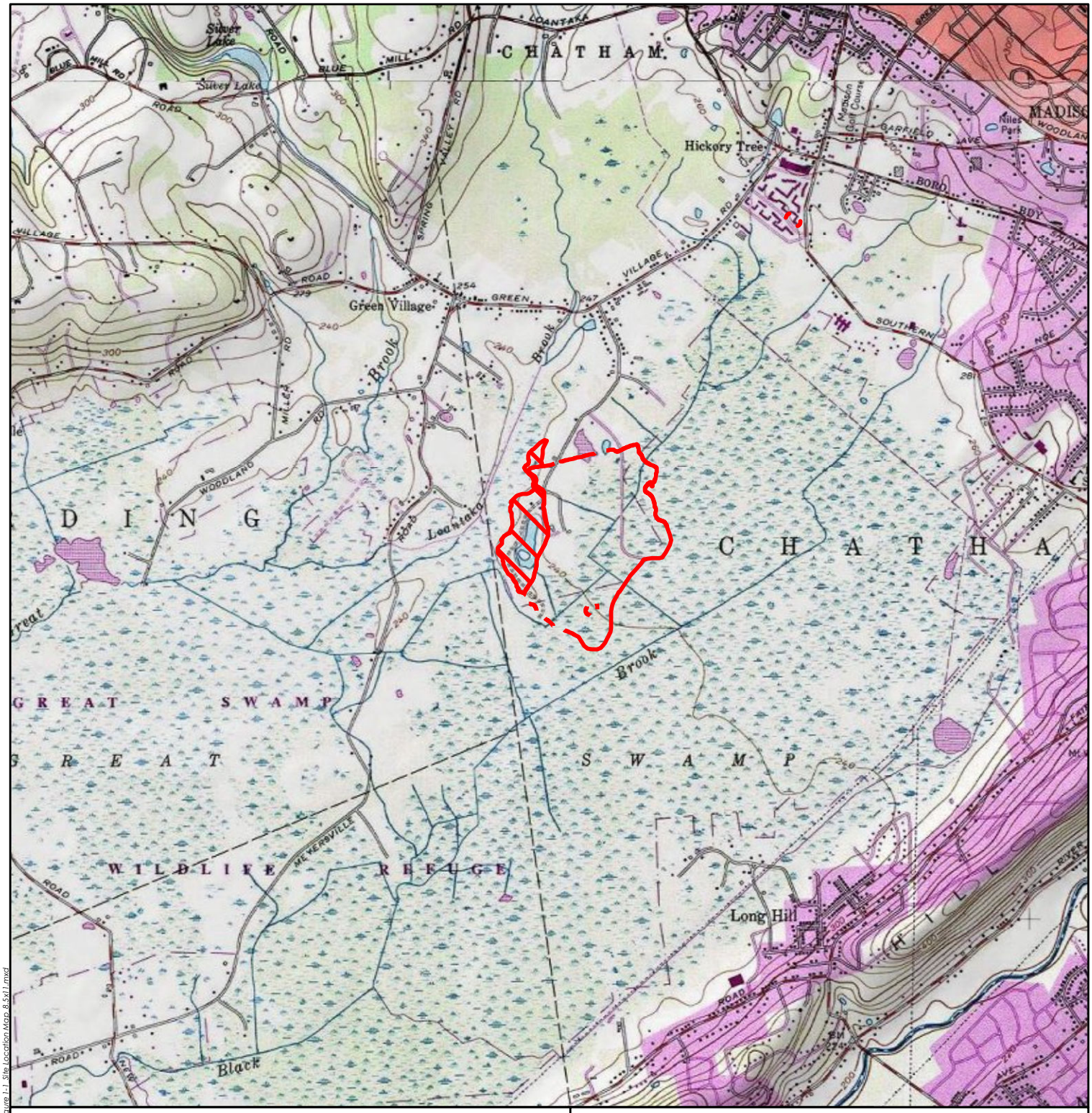
United States Environmental Protection Agency. 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. USEPA 540-R-97-006. Available from: www.epa.gov/oswer/riskassessment/ecorisk/ecorisk.htm. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. June.

United States Environmental Protection Agency. 1992. Supplemental Guidance to RAGS: Calculating the Concentration Terms. Publication 9285.7-08I. Available from: https://rais.ornl.gov/documents/UCLsEPASupGuidance.pdf. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. May

US Fish and Wildlife Service (USFWS). 2001. Morris County, New Jersey, Operable Unit 3 of the Asbestos Dump Superfund Site. Restoration Plan and Environmental Assessment. May. Available from https://www.cerc.usgs.gov/orda_docs/DocHandler.ashx?task=get&ID=334

US Fish and Wildlife Service. 2014. Great Swamp National Wildlife Refuge, Comprehensive Conservation Plan. November. Available from http://www.fws.gov/uploadedFiles/GRSFullCCP.pdf

FIGURES



Site Property created from Arcadis CAD drawings received December 2015. United States Geological Survey topographic maps accessed via ArcGIS Online and provided by National Geographic Society andi-cubed on 2 December 2019. Morristown (1982) and Chatham (1982) quadrangles are shown.

2,000 1,000 0 2,000 Feet

Legend

- Edge of landfilled wastes (dashed where approximate)
- Waste and debris observed on ground surface but not observed or anticipated below ground surface

Site Location

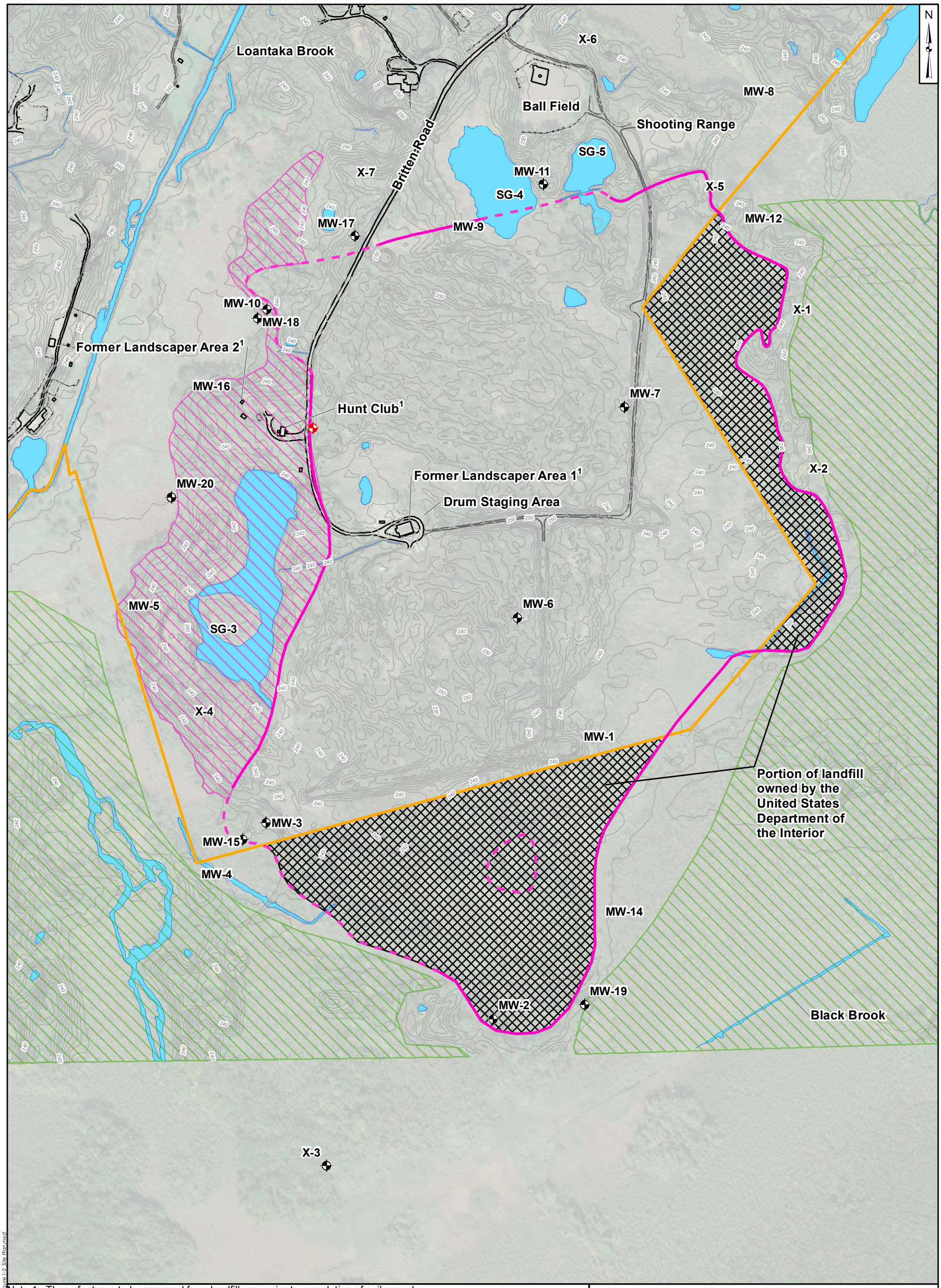
ROLLING KNOLLS LANDFILL SUPERFUND SITE
CHATHAM, NEW JERSEY

Geosyntec consultants

Princeton, NJ | April 2020

Figure 1-1

P:\GIS\GISprojects\JR0149 - Rolling Knolls Columbia MD_20180427\Report LNS\Figure 1-1 Site Location Map 8.5x11.mxd



Note 1: These features to be removed from landfill area prior to completion of soil remedy.
Note 2: The boundary of the landfill is approximate and will be confirmed during the Pre-Design Investigation.
Site Plan created from Arcadis CAD drawings received December 2015.
Aerial imagery accessed via ArcGIS Online and provided by the United States Department of Agriculture on 2 December 2019.
Image is dated 31 July 2015.

400 200 0 400 Feet

Legend

- Non-Potable Supply Well
- Monitoring Well Location
- Staff Gauge Location
- Edge of landfilled wastes (dashed where approximate)
- Great Swamp National Wildlife Refuge property boundary
- Areas where surface water flow does not exhibit typical bed and bank morphology
- Waste and debris observed on ground surface but not observed or anticipated below ground surface
- Portion of landfill owned by the United States Department of the Interior
- Open water

Site Plan

ROLLING KNOLLS LANDFILL SUPERFUND SITE
CHATHAM, NEW JERSEY

Geosyntec consultants

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Figure 1-2

P:\GIS\GISprojects\R0149 - Rolling Knolls Columbia MD_20180427\Report_1\FS Figure 1-2 Site Plan.mxd